CLAIMS

We claim:

1. A method for attaching an optical device package to a semiconductor device package comprising:

forming a wirebond stud on an electrical contact surface located on a bottom surface of the optical device package;

applying an adhesive material to the wirebond stud;

placing the semiconductor device package on the bottom surface of the optical device package such that an electrical contact surface on the semiconductor device package makes contact with the wirebond stud and the adhesive material applied to the wirebond stud; and

curing the adhesive material whereby the optical device package is firmly attached to the semiconductor device package.

2. A method as recited in claim 1, wherein the wirebond stud separates and creates a standoff gap between the optical device package and the semiconductor device package, the method further comprising:

injecting and filling the standoff gap with underfill material; and

curing the underfill material.

3. A method as recited in claim 1, wherein the adhesive material is material selected from the group consisting of epoxy and solder.

4. A method as recited in claim 1, wherein the applying of adhesive material comprises dispensing a desired amount of adhesive material using a pressurized-volumetric dispenser.

5. A method as recited in claim 1, wherein the applying of adhesive material comprises:

placing a stencil over the bottom surface of the optical device package; and

screen printing the adhesive material onto the bottom surface of the optical device package through the stencil.

6. A method as recited in claim 1, wherein the semiconductor device package is a leadless leadframe package.

7. A method as recited in claim 6, further comprising:

providing the leadless leadframe package with a top surface, a bottom surface opposite the top surface, a peripheral surface adjacent to the top and bottom surfaces, a die embedded within the leadless leadframe package, a plurality of solder balls positioned on top of the die where an area of at least one of the solder balls is exposed on the top surface of the leadframe package, and a plurality of electrical contacts that are exposed along the peripheral surface and substantially co-planar with the bottom surface of the leadless leadframe package.

8. A method as recited in claim 1, wherein the electrical contact surface on the optical device package is part of a flexible tape material having embedded circuit traces, the embedded circuit traces having a first end connected to an optical device component and a second end that forms the electrical contact surface of the optical device package.

9. A method as recited in claim 8, wherein the flexible circuit tape is adhered to a side and a bottom surface of the optical device package.

10. A method as recited in claim 1, wherein the optical device package is a transmitter.

11. A method as recited in claim 1, wherein the optical device package is a receiver.

12. A method as recited in claim 1, further comprising:

leveling the wirebond stud to a desired height by pushing the wirebond stud against a leveled surface.

13. A method as recited in claim 1, further comprising:

providing the optical device package having a body with a supporting side surface and a photonic device attached to the supporting side surface, wherein the photonic device is electrically connected to the electrical contact surface on the optical device package.

14. A method for attaching an optical device package to a semiconductor device package comprising:

forming a wirebond stud on an electrical contact surface located on a bottom surface of the optical device package;

applying an anisotropic conductive film to a top surface of the semiconductor device package, the anisotropic conductive film containing conductive particles, the top surface of the semiconductor device package containing an electrical contact surface;

placing the bottom surface of the optical device package onto the top surface of the semiconductor device package such that the electrical contact surface of the semiconductor device package is aligned with the wirebond stud; and

applying pressure and heat to the optical and the semiconductor device packages such that the wirebond stud sinks into the anisotropic conductive film and compresses the conductive particles together, the compressed conductive particles forming an electrically conductive pathway between the wirebond stud and the electrical contact surface on the semiconductor device package.

15. A method as recited in claim 14, wherein the conductive particles have a nickel core and a gold outer layer.

16. A method as recited in claim 14, wherein the conductive particles have a polymer core and a gold outer layer.

17. A method as recited in claim 14, wherein the electrical contact surface on the optical device package is part of a flexible tape material having embedded circuit traces, the embedded circuit traces having a first end connected to an optical device component and a second end that forms the electrical contact surface of the optical device package

18. A method as recited in claim 17, wherein the flexible circuit tape is adhered to a side and a bottom surface of the optical device package.

19. A method as recited in claim 14, wherein the semiconductor device package is a leadless leadframe package.

20. A method as recited in claim 19, further comprising:

providing the leadless leadframe package with a top surface, a bottom surface opposite the top surface, a peripheral surface adjacent to the top and bottom surfaces, a die embedded within the leadless leadframe package, a plurality of solder balls positioned on top of the die where an area of at least one of the solder balls is exposed on the top surface of the leadframe package, and a plurality of electrical contacts that are exposed along the peripheral surface and substantially co-planar with the bottom surface of the leadless leadframe package.

21. A method as recited in claim 14, further comprising:

leveling the wirebond stud to a desired height by pushing the wirebond stud against a leveled surface.

22. A method as recited in claim 14, further comprising:

providing the optical device package having a body with a supporting side surface and a photonic device attached to the supporting side surface, wherein the photonic device is electrically connected to the electrical contact surface on the optical device package.